

ABSTRACT

DETECTING AND MAINTAINING LINEARITY IN A POWER AMPLIFIER SYSTEM THROUGH ENVELOPE POWER COMPARISONS

5 Small portable communication devices that support multiple modulation techniques cannot gain the benefits of using an isolator at the output of a power amplifier to provide stability in the load impedance. However, for communication devices that include amplitude modulation schemes, maintaining linear operation of the power amplifier is still required. In the presence of unstable load impedance, this can be a difficult task. As a solution, the linearity of the

10 power amplifier is detected by comparing the envelope of the output signal with the base band signal used to modulate the output signal. If the envelopes are similar, then the power amplifier may be operating in the linear region. When the linearity of the power amplifier degrades, there is an increase in the difference between the envelopes. By adjusting the power level of the input signal to the power amplifier when the envelope difference appears,

15 linearity of the power amplifier is maintained.